



United States Department of Agriculture
Animal and Plant Health Inspection Service

Plant Protection and Quarantine



ArcPad™ (mobile mapping software) Survey Examples

Dr. Ronald D. Weeks Jr.
CPHST-ANPCL-SIPS

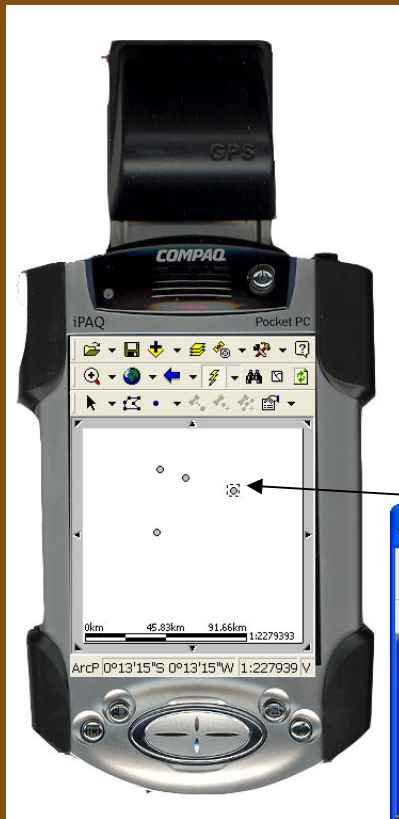
**United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Center for Plant Health Science and Technology
Analytical and Natural Products Chemistry Laboratory
Soil Inhabiting Pests Section**

Current survey efforts using ArcPad™

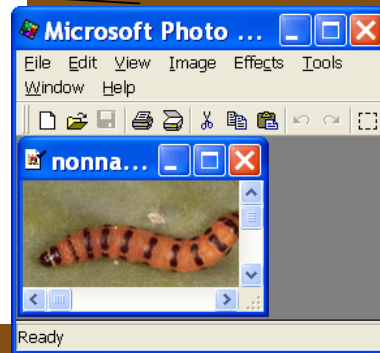
- Phorid fly releases and surveillance – state cooperators
- Cactus Moth CAPS surveys – pest survey specialists
- Cactus Moth volunteer surveys – state park personnel, master gardeners, etc
- Cactus Moth SIT – ARS and PPQ
- Med fly in Costa Rica – APHIS, International Services
- Several ad-hoc surveys in development (e.g. *Phytophthora ramorum*)



Software flexibility and functionality



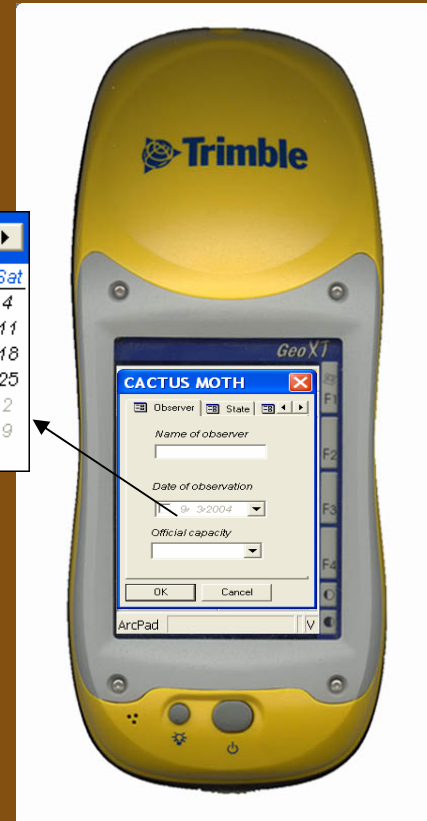
Hyperlinks to
web pages and
images



Navigate to
map features

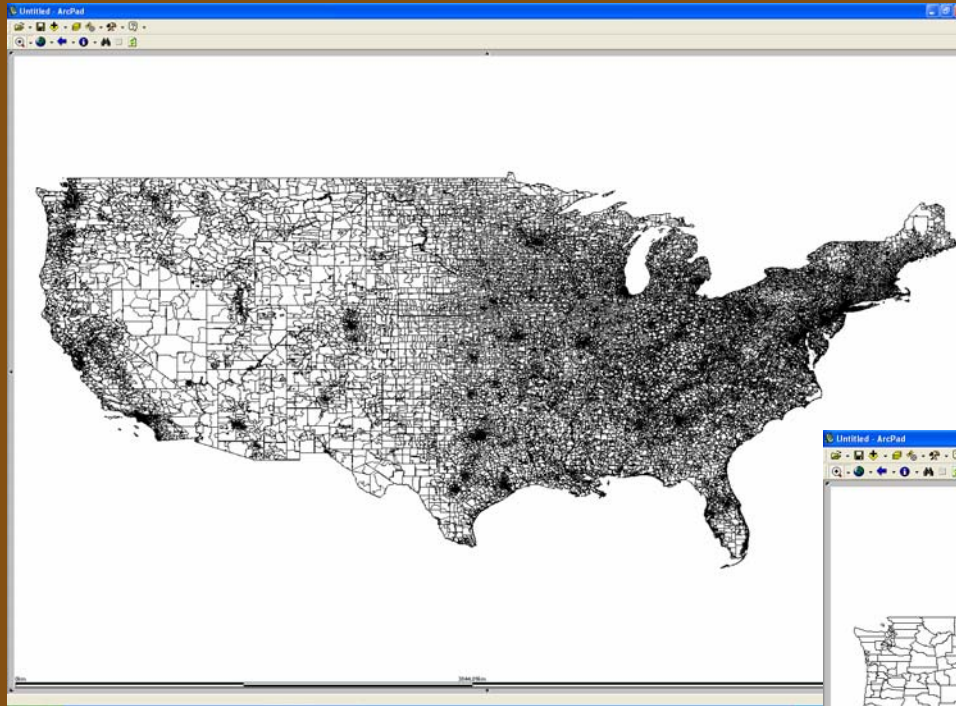
Custom pull down
menus reduce errors

September, 2004						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9
Today: 9/3/2004						



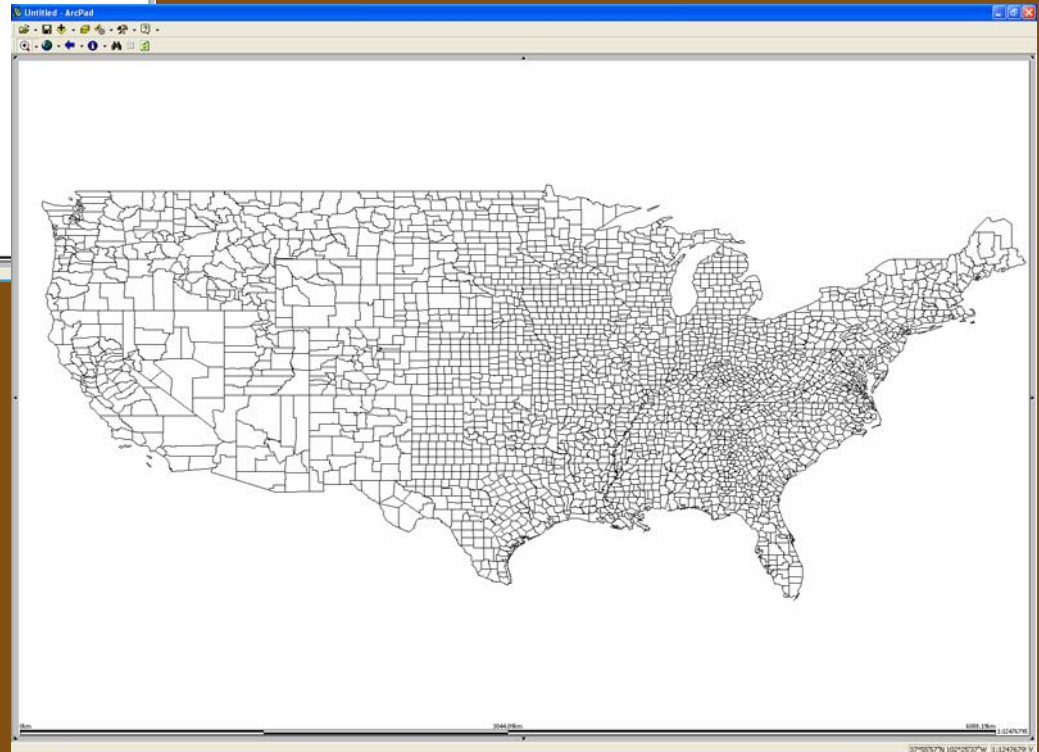
Download data in the
field or in the office for
validation or editing

Mapping and Location identifiers

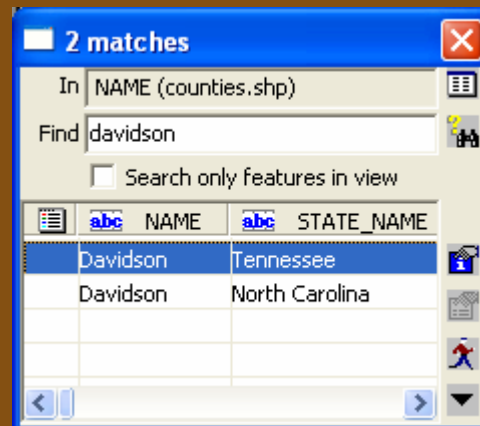
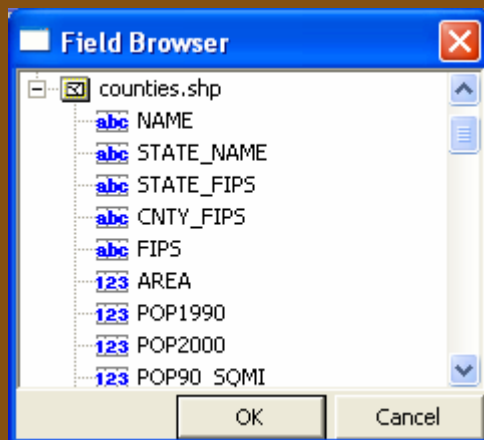


***All U.S. counties
(names and FIPS)***

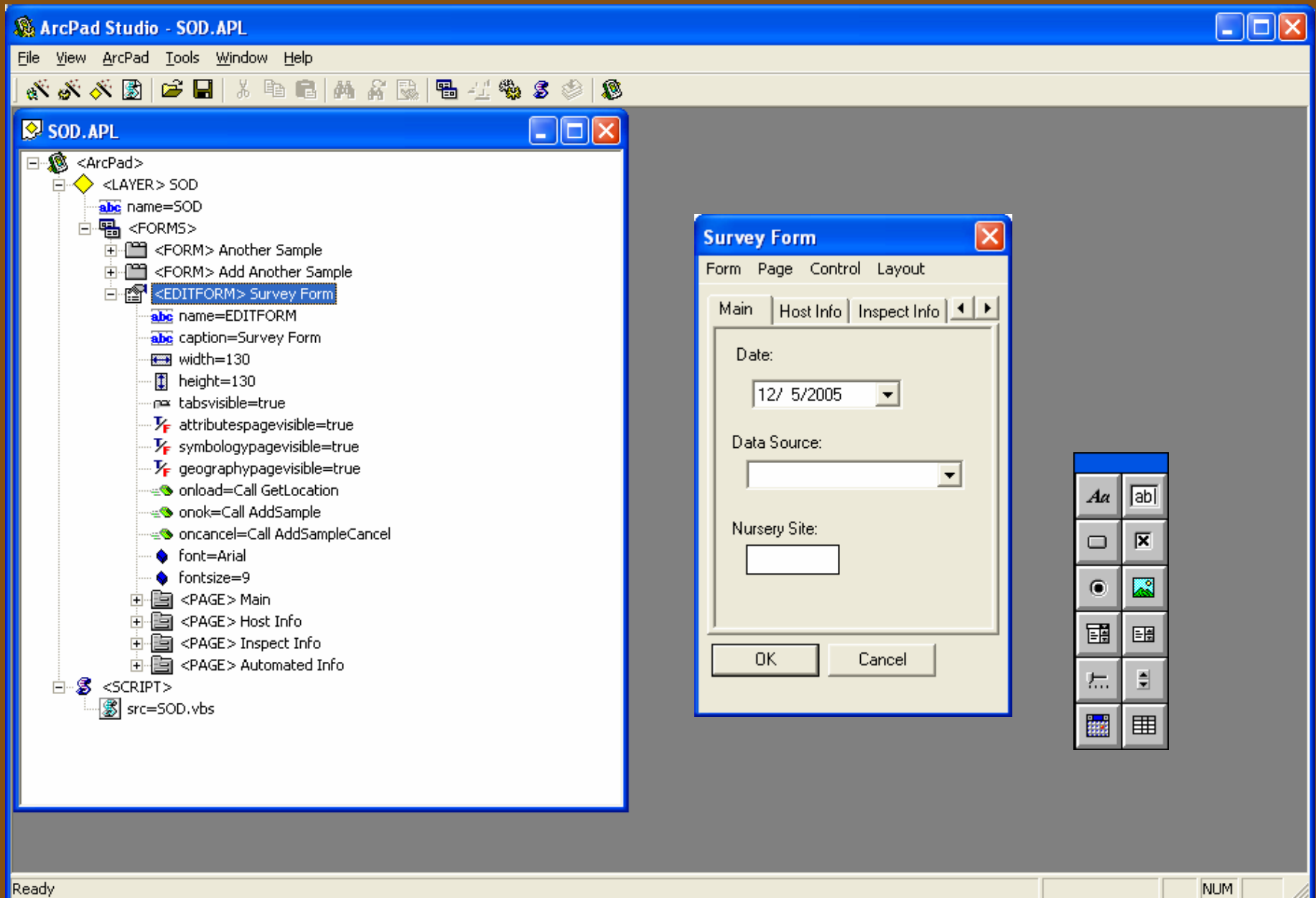
***All U.S. counties and
Zip Codes***

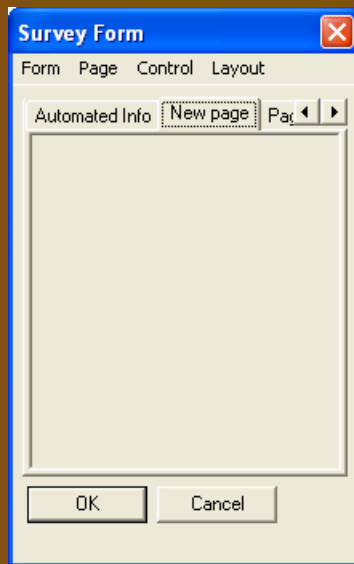


Search features

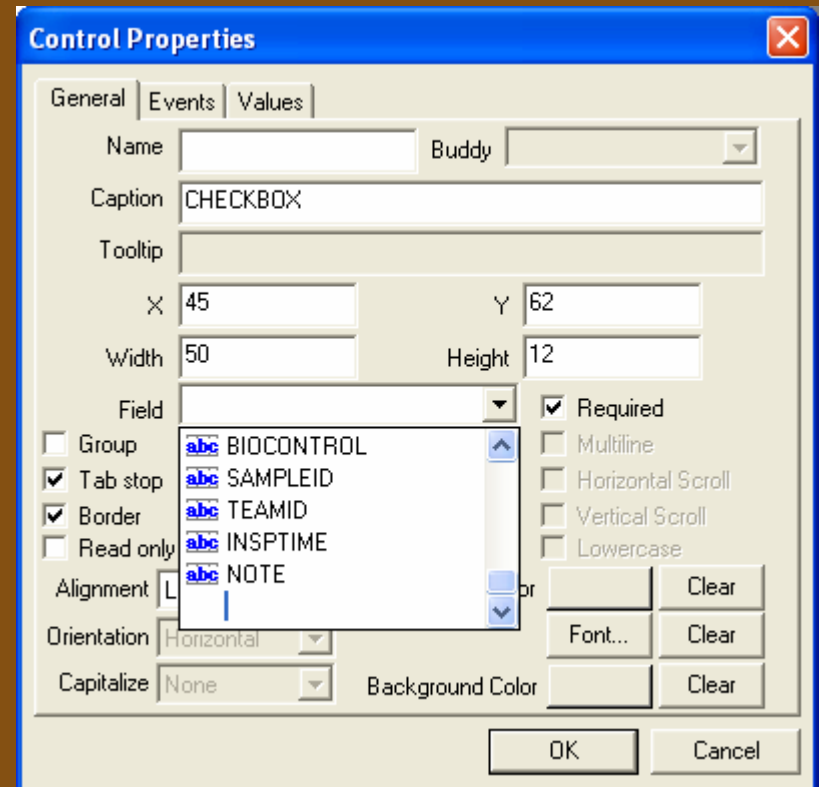
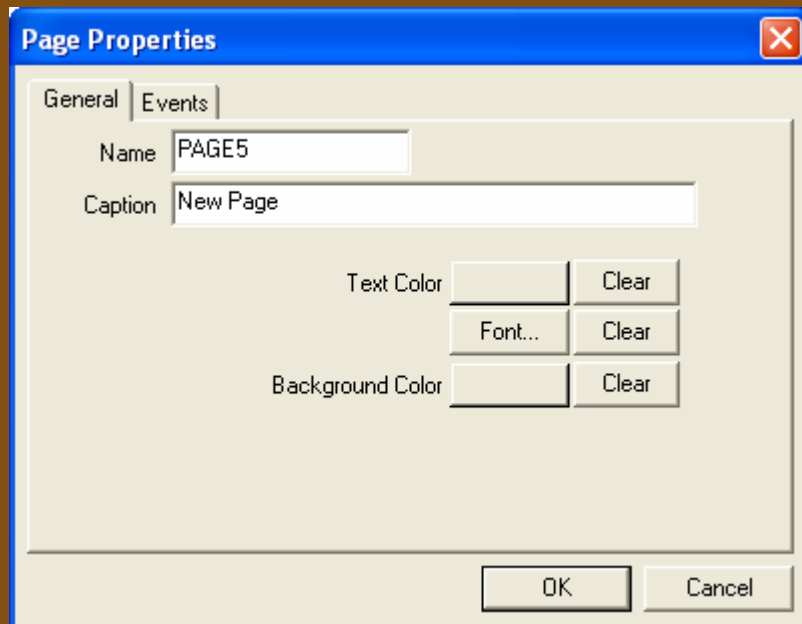


ArcPad Application Builder





- **Form and Page Controls**
 - Create new forms
 - Add and organize Pages to Forms
- **Control Properties**
 - Add buttons, drop-down menus
 - Link to data fields
 - Add restrictions



Some Survey Menus

Survey Form

Automated Info Attrb

Obs No: SODMS0101

FIPS: 28059

Latitude: 30.61

Longitude: -88.81

Zipcode: 39565

Pest: FGHEPWN

Survey Method: 00557

Descriptor: 318

OK Cancel

Another Sample

Main

Do you have another sample at this location

☒ Yes and Same Species

☐ Yes but Different Species

☐ No

OK Cancel

Add Another Sample

Host Info Inspection

Host Species:

Host Stage (Optional):

Host (Crop) Nursery Category:

OK Cancel

Cactoblastis

Survey Info Pest Hist

Survey Method: Pherocon 1C Trap

Survey location: AG FIELD

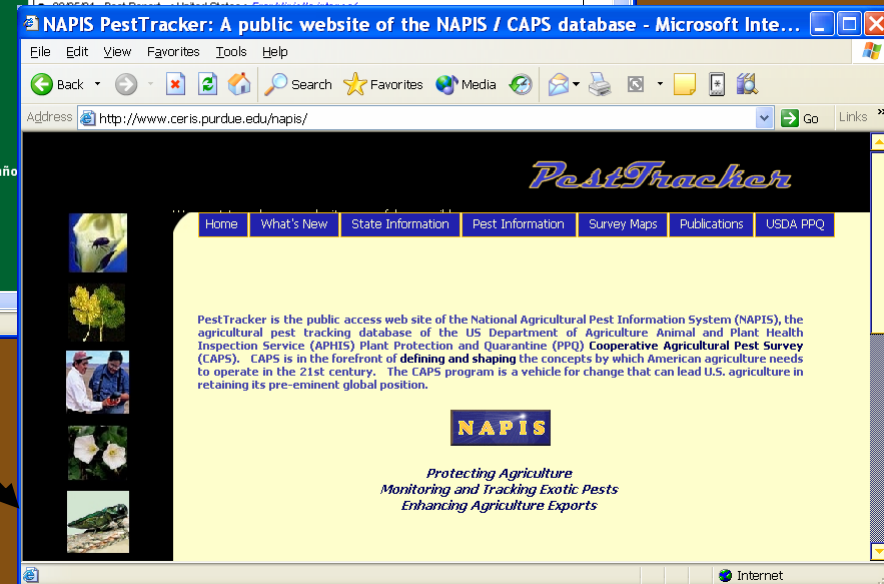
Host: Opuntia spp.

Pest:

- Opuntia spp.
- O. basilaris
- O. engelmannii
- O. ficus-indica
- O. lindheimeri
- O. microdasys
- O. robusta
- O. rufida
- O. santa-rita

OK

Data is formatted for easy retrieval and integration



**NAPIS: 23 fields - 8 required
- 22 comma-delimited fields**

An example data sheet

Microsoft Excel - cactus_moth_survey.xls

File Edit View Insert Format Tools Data Window Help Acrobat

Type a question for help

100%

Reply with Changes... End Review...

B1 Obs_num

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Obs_num	obs_date	data_sourc	FIPS	EPA_site	Crop_life	crop_situa	LATITUDE	LONGITUDE	EP_pst_cod	Pest_life	Pest_Statu	Surv_meth	Quantifica
2		8/15/2005	11	06085	67004			30.39169000000	-89.09383333300	ITBMDDA			11111	0
3		8/15/2005	11	06053	67004			36.97023333300	-121.55383333300	ITBMDDA	15		11111	1
4		8/15/2005	11	06053	67004			36.80288166700	-121.65644833000	ITBMDDA	15		11111	1
5		8/15/2005	11	06053	28102			36.56535166700	-121.51340667000	ITBMDDA	15		11111	11
6		8/15/2005	11	06053	67004			36.51531000000	-121.43920500000	ITBMDDA	15		11111	15
7		8/15/2005	11	06053	28102			36.40486333300	-121.35044833000	ITBMDDA	15		11111	20
8		8/15/2005	11	06053	67004			36.40487833300	-121.35045667000	ITBMDDA	15		11111	1
9		8/15/2005	13	06053	68002			36.12982333300	-121.02379667000	ITBMDDA	15		11111	8
10		8/15/2005	11	06053	68002			35.86327333300	-120.80426500000	ITBMDDA	15		11111	1
11		8/15/2005	11	06079	67002			35.74189333300	-120.69834333000	ITBMDDA	15		11111	1
12		8/16/2005	11	06079	28045			35.47066666700	-120.97689333000	ITBMDDA			11111	0
13		8/16/2005	11	06079	67004			35.44121833300	-120.89027000000	ITBMDDA			11111	0
14		8/16/2005	11	06079	67004			35.42267000000	-120.78935333000	ITBMDDA	15		11111	2
15		8/16/2005	11	06079	30020			35.27816000000	-120.67465167000	ITBMDDA	15		11111	2
16		8/29/2005	11	06083	67004			34.46985500000	-119.77718167000	ITBMDDA	15		11111	14
17		8/29/2005	11	06083	67004			34.45253166700	-119.70841167000	ITBMDDA	15		11111	75
18		8/29/2005	11	06083	67004			34.41359500000	-119.52774000000	ITBMDDA	15		11111	6
19		8/30/2005	11	06083	32007			34.44245333300	-119.65739000000	ITBMDDA	15		11111	6
20		8/30/2005	11	06083	32007			34.44305000000	-119.65633667000	ITBMDDA	15		11111	31
21		8/30/2005	11	06111	67004			34.44312666700	-119.65635000000	ITBMDDA	15		11111	6
22		8/30/2005	11	06111	67004			34.42903000000	-119.29448833000	ITBMDDA	15		11111	7
23		8/30/2005	11	06111	61030			34.38594166700	-118.96061500000	ITBMDDA	15		11111	97
24		8/30/2005	11	06037	32007			34.12519166700	-118.11012000000	ITBMDDA	15		11111	40
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31		8/31/2005	11	06071	32007			33.70087500000	-116.37243833000	ITBMDDA	15		11111	41
32		8/31/2005	11	06065	67004			33.70081833300	-116.37250000000	ITBMDDA	15		11111	150
33		8/31/2005	11	06073	67021			33.29657333300	-116.65241167000	ITBMDDA	15		11111	42
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36		8/31/2005	11	06073	67004			33.35045833300	-117.11458833000	ITBMDDA	15		11111	150
37		8/31/2005	11	06073	32007			33.05242000000	-117.28075500000	ITBMDDA	15		11111	8
38		8/31/2005	11	06073	67024			33.14618833300	-117.34225167000	ITBMDDA	15		11111	1
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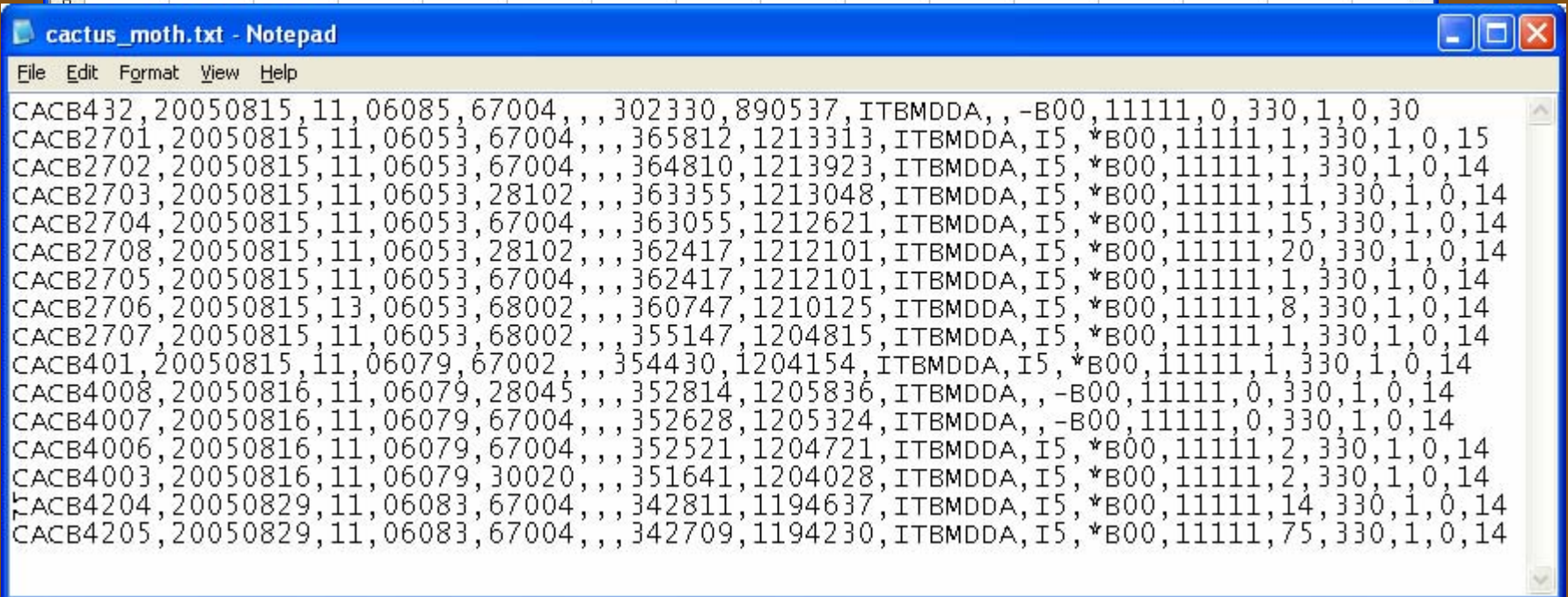
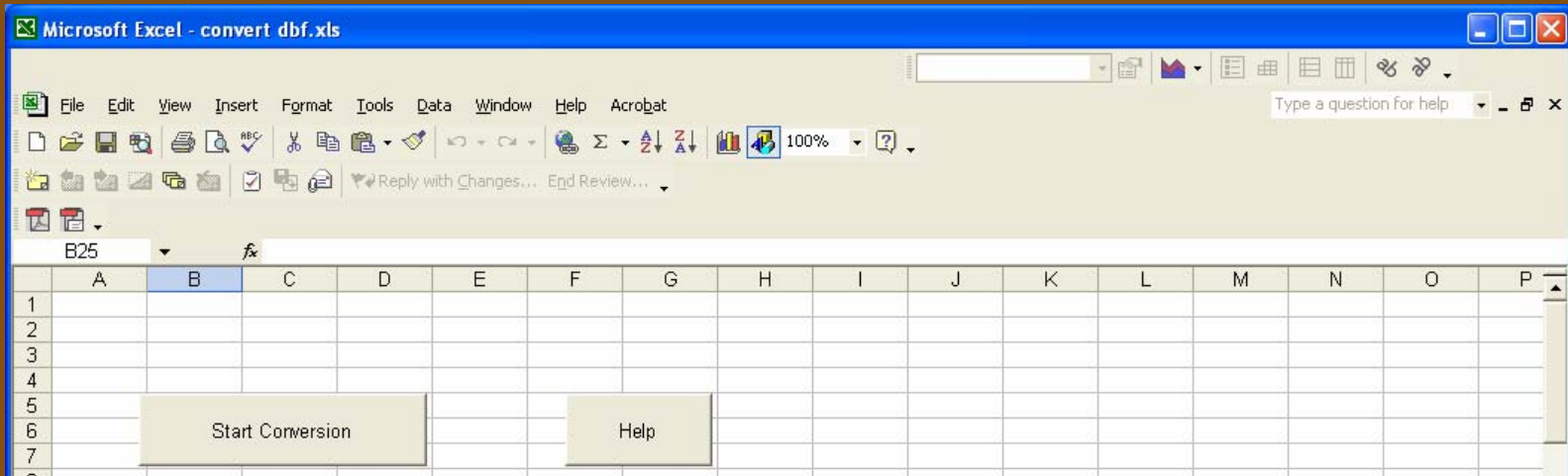
cactus_moth_survey/

Draw AutoShapes

Ready

NUM SCRL

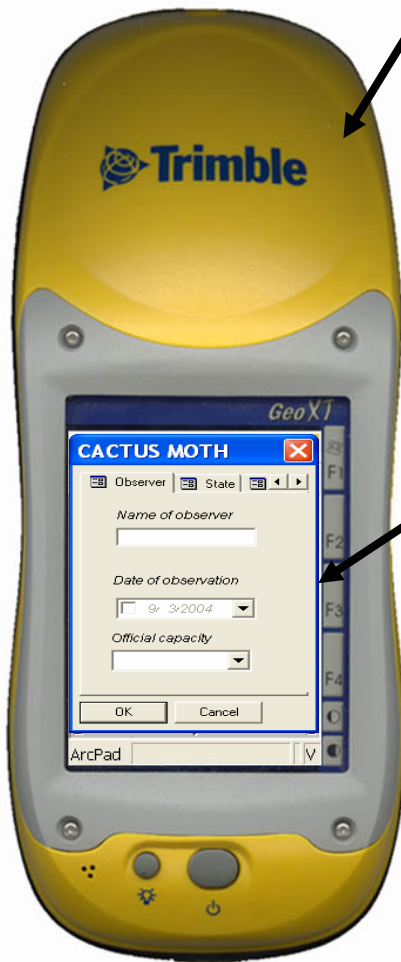
Data Conversion Utility



Some hardware options (goal dependent)

Trimble GeoXT

- sub-meter accuracy
- very expensive



Teletype World Navigator® GPS

- ca. 1 - 5 m accuracy
- way-less expensive

- ESRI GIS Software® (USDA - APHIS license)
- ArcPad 7
- ArcPad Application Builder

IPAQ ® Pocket PC H3955
IPAQ ® Expansion Pack Plus
256MB SecureDigital ® Card
USB Sync Cable – IPAQ®

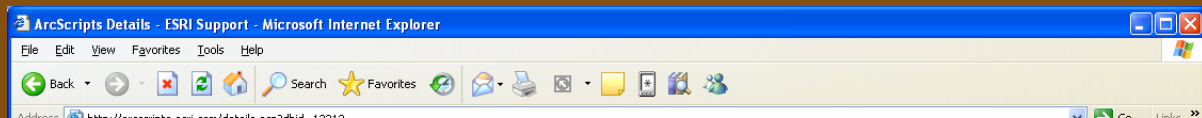


New capabilities in ArcPad 7 and ArcPad Application Builder

- Higher-quality mapping capabilities
- Integrates GPS, digital cameras, and range finders in data collection
- More robust editing capabilities; snapping, undo, offsets,
- Add field sketches and notes using Graphics layer.
- Application Builder has improved script editor
- Improved customization Quick Tool Wizard



On-line developer and user support



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Environmental/Natural Resource Tools for ArcPad

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Author	Nicholas Thomas
File Name	AgTools.zip
Language	VBScript
Last Modified	Jun 8 2004
Software	ArcPad
File Size	104.76 kb
Downloads	3030

Summary

This suite of tools, located on a single toolbar, allows environmental, agriculture and other natural resource field workers to make sampling grids, calculate statistics for field data attributes, select which layers should be editable and navigate to specific field locations using ArcPad.

The tools download includes a read_me.txt file containing installation instructions and how each can be used. The tools are designed for use in ArcPad 6.0.2 and later. Although they might work in older versions, this testing has not been done.

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ArcPad - Microsoft Internet Explorer

Address: <http://www.esri.com/software/arcpad/index.html>

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ArcPad – Mobile GIS Software for Field Mapping Applications

ArcPad is software for mobile GIS and field mapping applications using handheld and mobile devices. ArcPad provides field-based personnel with the ability to capture, analyze, and display geographic information. Field data collection with ArcPad is efficient and accurate and can integrate input from GPS receivers, rangefinders, and digital cameras.

With ArcPad, you can

- Perform reliable, accurate, and validated field data collection.
- Integrate GPS, rangefinders, and digital cameras into GIS data collection.
- Share enterprise data with field-workers for updating and decision making.
- Improve the productivity of GIS data collection.
- Improve the accuracy of the GIS database and make it more up to date.

Try ArcPad

[Download Now](#)

Showcase

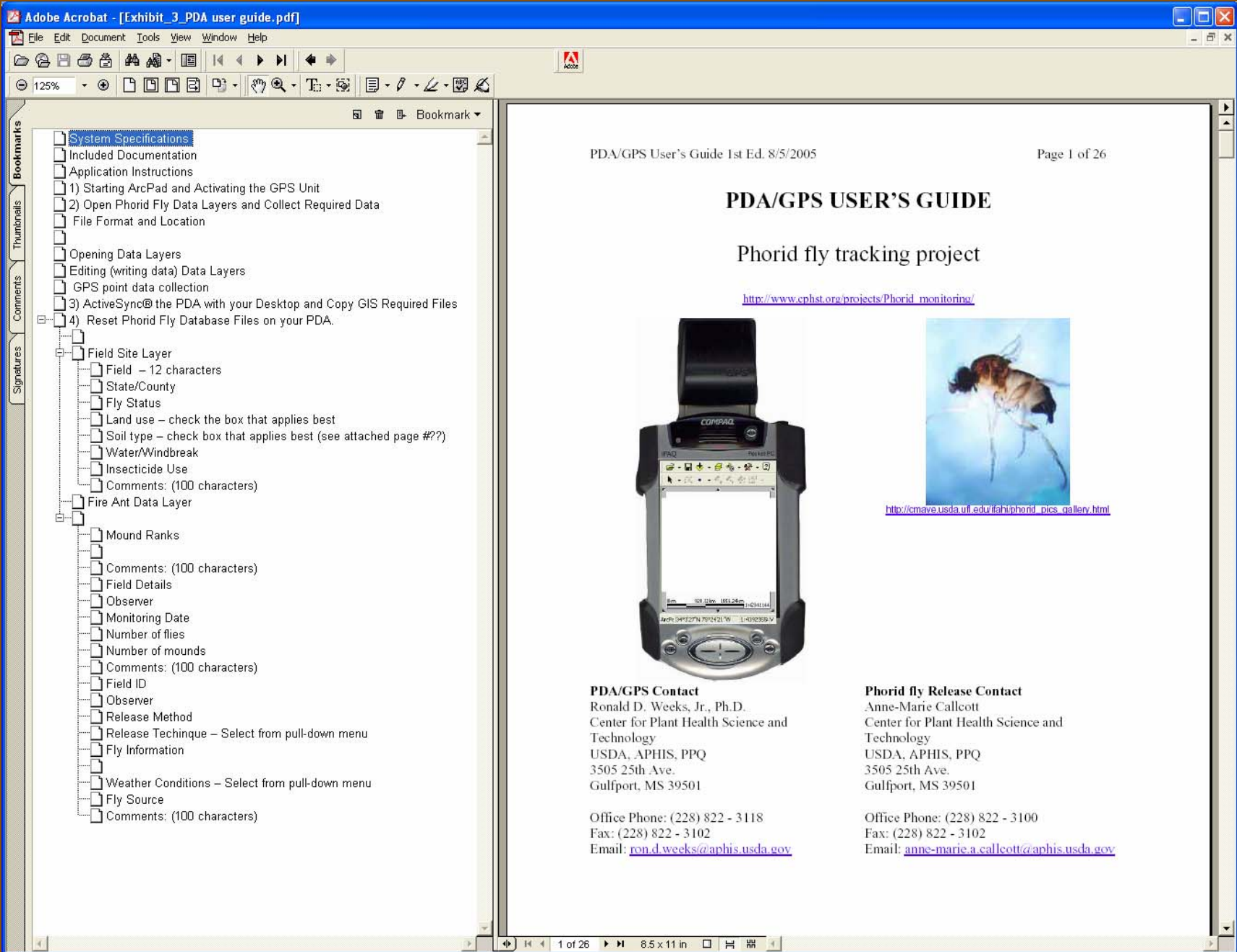


- [ArcPad 7 Now Available for Download](#)
- [Geography Lessons: California and North Carolina Use ArcPad for More Efficient Fieldwork, Mobile Enterprise Magazine](#)

News and Events

- [North Carolina Public Health Implements Statewide Mobile GIS for Emergency Evaluations](#)
- [ArcPad Fights Fires in Rough Terrain](#)

ArcGIS



Adobe Acrobat - [Exhibit_3_PDA user guide.pdf]

File Edit Document Tools View Window Help

125%

Bookmark

System Specifications

- ☐ Included Documentation
- ☐ Application Instructions
 - 1) Starting ArcPad and Activating the GPS Unit
 - 2) Open Phorid Fly Data Layers and Collect Required Data
 - File Format and Location
- ☐ Opening Data Layers
- ☐ Editing (writing data) Data Layers
- ☐ GPS point data collection
- 3) ActiveSync® the PDA with your Desktop and Copy GIS Required Files
- 4) Reset Phorid Fly Database Files on your PDA.
- Field Site Layer
 - ☐ Field – 12 characters
 - ☐ State/County
 - ☐ Fly Status
 - ☐ Land use – check the box that applies best
 - ☐ Soil type – check box that applies best (see attached page #??)
 - ☐ Water/Windbreak
 - ☐ Insecticide Use
 - ☐ Comments: (100 characters)
- Fire Ant Data Layer
 - ☐ Mound Ranks
 - ☐ Comments: (100 characters)
 - ☐ Field Details
 - ☐ Observer
 - ☐ Monitoring Date
 - ☐ Number of flies
 - ☐ Number of mounds
 - ☐ Comments: (100 characters)
 - ☐ Field ID
 - ☐ Observer
 - ☐ Release Method
 - ☐ Release Technique – Select from pull-down menu
 - ☐ Fly Information
 - ☐ Weather Conditions – Select from pull-down menu
 - ☐ Fly Source
 - ☐ Comments: (100 characters)



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PDA/GPS USER'S GUIDE

Phorid fly tracking project

http://www.cphst.org/projects/Phorid_monitoring/



http://cmave.usda.afflu.edu/iahu/phorid_pics_gallery.html

PDA/GPS Contact
Ronald D. Weeks, Jr., Ph.D.
Center for Plant Health Science and Technology
USDA, APHIS, PPQ
3505 25th Ave.
Gulfport, MS 39501

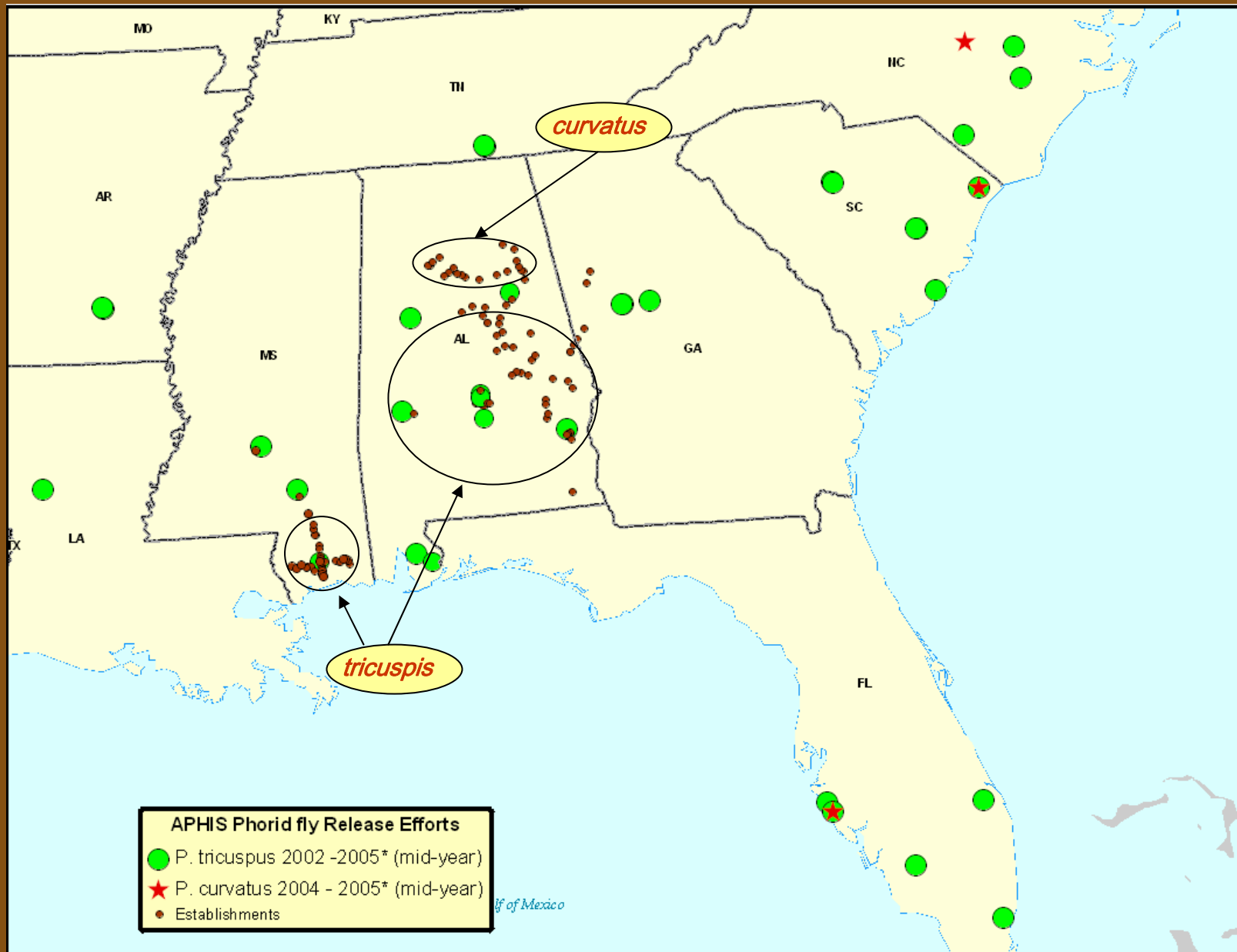
Office Phone: (228) 822 - 3118
Fax: (228) 822 - 3102
Email: ron.d.weeks@aphis.usda.gov

Phorid fly Release Contact
Anne-Marie Calcott
Center for Plant Health Science and Technology
USDA, APHIS, PPQ
3505 25th Ave.
Gulfport, MS 39501

Office Phone: (228) 822 - 3100
Fax: (228) 822 - 3102
Email: anne-marie.a.callcott@aphis.usda.gov

1 of 26 8.5 x 11 in

Some Phorid Spread Data in AL & MS



Phorid fly Data Flow Chart

PDA

CPHST (SIPS) Workstation

Decision Support

